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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,556	05/26/2006	Sang Yup Lee	4240-142	1480
23448	7590	04/30/2007	EXAMINER	
INTELLECTUAL PROPERTY / TECHNOLOGY LAW			MEAH, MOHAMMAD Y	
PO BOX 14329			ART UNIT	PAPER NUMBER
RESEARCH TRIANGLE PARK, NC 27709			1652	
MAIL DATE		DELIVERY MODE		
04/30/2007		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/580,556	LEE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Mohammad Meah	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.  
 2a) This action is **FINAL**.                  2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) \_\_\_\_ is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 1-35 is/are allowed.  
 6) Claim(s) \_\_\_\_ is/are rejected.  
 7) Claim(s) \_\_\_\_ is/are objected to.  
 8) Claim(s) 1-35 are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

The claims 1-35 are pending in the instant office action.

### ***Election/Restrictions***

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions, which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claims 1, 4-7, drawn rumen bacterial mutant having *ldhA* and *pfl* gene disrupted to increase succinic acid production.

Group II, claims 2, 8-9, 31-31, drawn rumen bacterial mutant having *ldhA* and *pfl* gene, *pta* gene and *ackA* gene disrupted to increase succinic acid production.

Group III, claims 3, 10, 33-34, drawn rumen bacterial mutant having *ldhA* and *pfl* gene and *ppc* gene disrupted to increase succinic acid production.

Group IV, Claims 11, 15-17, drawn to method of producing mutant of group I by mutating *ldhA* and *pfl* gene.

Group V, Claims 12, 14, 18-20, drawn to method of producing mutant of group II by mutating *ldhA* and *pfl* gene, *pta* gene and *ackA* gene.

Group VI, Claims 13, 21-23, 35, drawn to method of producing mutant of group III by mutating *ldhA*, *ppc* and *pfl* gene.

Group VII, claim 24, drawn to vector comprising disrupted *ldhA* gene.

Group VIII, claim 25, drawn to vector comprising disrupted *pfl* gene

Group IX, claim 26, drawn to vector comprising disrupted *pta* and *ackA* gene

Group X, claim 27, drawn to vector comprising disrupted *ppc* gene

Group XI, claims 28-30, method of producing succinic acid using rumen bacterial mutant having *ldhA* and *pfl* gene disrupted.

Group XII, claims 28-30, method of producing succinic acid using rumen bacterial mutant having *ldhA* and *pfl* gene, *pta* gene and *ackA* gene disrupted.

Group XIII, claims 28-30, method of producing succinic acid using rumen bacterial mutant having *ldhA* and *pfl* gene, *ppc* gene disrupted.

The inventions listed in Groups I-XIII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The technical feature of Groups IV-VI and XI-XIII are the method steps using particular reagents. Said steps include making a product that is not shared with groups I-III bacteria and groups VII-X vectors. Thus, the technical feature of Group I is not shared with group IV, so on. Products of Groups I-III are different mutant bacteria having at least one different gene disrupted giving them different technical feature.

Furthermore', the technical feature linking group I-XIII appears to be that they all relate to mutant strains having ldhA and pfl genes disrupted for the production of succinic acid . The mutant strains having ldhA and pfl genes disrupted for the production of succinic acid does not constitute a "special technical feature" as defined by PCT Rule 13.2, because it does not claim a feature which defines a contribution over the prior art as mutant strains having ldhA and pfl gene disrupted for the production of succinic acid are taught by Chatterjee et al (appld Env. Micrbiol 2001, 148-154, from IDS).

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement is traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request

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under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad Meah whose telephone number is 571-272-1261. The examiner can normally be reached on 8:30-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapu Achutamurthy can be reached on 571-272-0928. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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